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THE TECHNICAL NAMES OF BRITISH MAMMALS.

BY OLDFIELD THOMAS, F.Z.S.

NOMENCLATURE, like linguistics or the structure of Greek names, is one of the collateral subjects which, however far from true zoology, have yet to be dealt with by every working zoologist; while it has the added inconvenience that, however it is done, whether rigidly or laxly, by rule or without it, its study is sure to bring down on the head of the worker the wrath of outsiders whenever unexpected results are arrived at.

This is especially the case in any group of animals which is particularly well known to outside, as opposed to technical, workers, and therefore any change in the nomenclature of so well-known a group as our British Mammals is to be greatly deplored from every point of view. But for this very reason, if technically unavoidable, changes should be adopted as soon and as widely as possible, so that the younger generation of naturalists may grow up knowing the proper names, and may not have to undergo the inconveniences we have all been put to.

An opportunity for a general revision of the names of our British Mammals seems now to have presented itself on the publication of a paper on the nomenclature of European Bats, showing what the proper names should be. These, as always happens, prove to be widely different from what we are accustomed to, and show how muddled and incorrect our current nomenclature has been.

The paper referred to is one by Mr. Gerrit S. Miller, a young American, who in the preparation of his monograph of North American *Vespertilionidæ*[*] has investigated the nomenclature of all our European genera of that family, and has published the results in an English periodical.[†]

So great is the general dislike to change in nomenclature that after the publication of such a paper one finds that some people reject the changes altogether, while others adopt them, using the fresh names as occasion offers, the natural result being a long period of confusion and inconvenience. It is therefore thought that a concise list of the British Mammals, under the names believed to be correct on the most rigid principles of nomenclature, will be of use both to those who wish to form an opinion of their own on the subject, and to those who are willing to accept, if they know them, whatever names may be adopted by the world in general.

The object of nomenclature is to obtain a stable list of names, and while experience shows that such stability is unattainable while each author clings to what he or she thinks is the "well-known" name, it equally shows that at first a technical, and then a general, uniformity *may* be obtained by the rigid application of the principle of priority, whatever the temporary inconveniences of such a course may be.

One of the chief causes of the large number of changes necessary is that Linnæus gave certain names to certain animals in Scandinavia, and that these names were transferred to quite different animals in Central Europe and England under the erroneous idea that they were the animals Linnæus referred to. The most disastrous of these mistakes is that of "*Vespertilio murinus*," as worked out by Mr. Miller and explained below; but the Hares and Shrews have also been affected by the same kind of mistake.

The wrong use of *Vesperugo* for *Pipistrellus*, *Crossopus* for *Neomys*, *Synotus* for *Barbastella*, and *Arvicola* for *Microtus* are simple cases of defiance of priority, and can be corrected without confusion.

Lastly, although more debateable than priority, I would express

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[*] See 'Zoologist,' *ante*, pp. 45–6.

[†] Ann. Mag. N. H. (6), xx. p. 379, 1897.

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my belief in the advisability of adopting the so-called "*Scomber-scomber* principle" on the score of its logicalness, simplicity, and exactness, the readiness with which the proper name of any species may be found under its guidance, and the exact indication it gives as to which is the type-species of a given genus. It unfortunately gives rise to some ugly compounds, although *Glis glis* or *Myotis myotis* are not so bad; but æsthetic considerations, full as they are of the personal equation, can hardly be allowed to have a preponderating influence in so prosaic a subject as nomenclature. Moreover, it so happens that of the animals to which *Scomber-scomber* names apply, several of the best known would still have strange and unfamiliar terms belonging to them even if the principle were rejected. Thus we should have *Meles europæus*, not *M. taxus* (which was based on the American Badger), and *Vulpes alopex*, not *V. vulgaris;* while the problem of what the name of the Polecat should be, if not *Putorius putorius*, is one which I have as yet quite failed to solve. There would therefore be no gain in the abolition of this much-abused principle so far as familiarity with the resulting names is concerned. In his editorial introduction to Lydekker's 'British Mammals,' Dr. Bowdler Sharpe has also advocated the same principle.

In the following list the Cetaceans are omitted, for, while there is probably but little wrong with their nomenclature, I have not worked at them sufficiently to care to be responsible for their names. It may, however, be noted that two of them—*Orca orca*, the Killer, and *Phocæna phocæna*, the Porpoise—take *Scomber-scomber* names; while it is evident that on a principle about preoccupied names nearly universally accepted, the Lesser Rorqual cannot bear a name based on "*Balæna rostrata*," Fabricius, 1780, when there was already a *Balæna rostrata*, Müller, 1776 (now *Hyperoodon rostratus*), in existence. Its name should apparently be *Balænoptera acuto-rostrata*, Lacépède. Finally, the Pilot Whale, whose generic name was originally formed in the feminine gender, should be called *Globicephala melæna* instead of *Globicephalus melas*, the universal rule being to alter the gender of the specific name to suit the generic, and not *vice versâ*.

CHIROPTERA.

English Name.	Current Name.	Name Advocated.
Greater Horseshoe Bat	*Rhinolophus ferrum-equinum*	*Rhinolophus ferrum-equinum.*
Lesser Horseshoe Bat	,, *hipposiderus*	,, *hipposiderus.*
Long-eared Bat	*Plecotus auritus*	*Plecotus auritus.*
Barbastelle	*Synotus barbastellus*	*Barbastella barbastellus.*
Serotine	*Vesperugo* (*Vesperus*) *serotinus*	*Vespertilio serotinus.*
Parti-coloured Bat	,, ,, *discolor*	,, *murinus.*
Noctule	,, (*Vesperugo*) *noctula*	*Pipistrellus noctula.**
Hairy-armed Bat	,, ,, *leisleri*	,, *leisleri.*
Pipistrelle	,, ,, *pipistrellus*	,, *pipistrellus.*
Bechstein's Bat	*Vespertilio bechsteini*	*Myotis bechsteini.*
Natterer's Bat	,, *nattereri*	,, *nattereri.*
Daubenton's Bat	,, *daubentoni*	,, *daubentoni.*
Whiskered Bat	,, *mystacinus*	,, *mystacinus.*
INSECTIVORA.		
Hedgehog	*Erinaceus europæus*	*Erinaceus europæus.*
Mole	*Talpa europæa*	*Talpa europæa.*
Common Shrew	*Sorex vulgaris*	*Sorex araneus.*
Pigmy Shrew	,, *pygmæus*	,, *minutus,*
Water Shrew	*Crossopus fodiens*	*Neomys fodiens.*
CARNIVORA.		
Wild Cat	*Felis catus*	*Felis catus.*
Fox	*Vulpes vulgaris*	*Vulpes vulpes.*
Pine Marten	*Martes abietum*	*Mustela martes.*
Polecat	*Mustela putorius*	*Putorius putorius.*
Common Stoat	,, *erminea*	,, *ermineus.*
Irish Stoat	——	,, *hibernicus.*
Weasel	,, *vulgaris*	,, *nivalis.*
Otter	*Lutra vulgaris*	*Lutra lutra.*
Common Seal	*Phoca vitulina*	*Phoca vitulina.*
Ringed Seal	,, *hispida*	,, *hispida.*
Harp Seal	,, *grœnlandica*	,, *grœnlandica.*
Hooded Seal	*Cystophora cristata*	*Cystophora cristata.*
Grey Seal	*Halichærus gryphus*	*Halichærus grypus.*
Walrus	*Trichechus rosmarus*	*Odobænus rosmarus.*
RODENTIA.		
Squirrel	*Sciurus vulgaris*	*Sciurus vulgaris.*
Dormouse	*Muscardinus avellanarius*	*Muscardinus avellanarius.*
Common Rat	*Mus decumanus*	*Mus decumanus.*
Black Rat	,, *rattus*	,, *rattus.*
House Mouse	,, *musculus*	,, *musculus.*
Long-tailed Field Mouse	,, *sylvaticus*	,, *sylvaticus.*
Harvest Mouse	,, *minutus*	,, *minutus.*
Water Vole	*Arvicola amphibius*	*Microtus amphibius.*

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* Mr. Miller, following Dr. H. Allen, recognizes under the name of *Pterygistes*, Kaup., a genus for *noctula* and *leisleri* distinct from *Pipistrellus*. But for the present it seems better that the distinction should remain in abeyance until our knowledge of the exotic *Pipistrelli* is much further advanced.

RODENTIA—(*continued*).

English Name.	Current Name.	Name Advocated.
Common Field Vole ...	*Arvicola agrestis*	*Microtus agrestis.*
Bank Vole	,, *glareolus*	*Evotomys glareolus.*
Hare	*Lepus timidus*	*Lepus europæus.*
Varying or "Blue" Hare	,, *variabilis*	,, *timidus.*
Rabbit	,, *cuniculus*	,, *cuniculus.*

UNGULATA.

Red Deer..................	*Cervus elaphus*	*Cervus elaphus.*
Fallow Deer	,, *dama*	,, *dama.*
Roe Deer	*Capreolus caprea*	*Capreolus capreolus.*

NOTES AND EXPLANATIONS TO THE LIST.

CHIROPTERA.

With regard to the fundamental error about "*Vespertilio murinus*" referred to above, it may be explained that Linnæus, speaking in his 'Fauna Suecica' solely of Swedish animals, considered that there were two species of *Vespertilio* only—*V. auritus* with long ears, and *V. murinus* with short ears. The first is *Plecotus auritus*, and the second is certainly not the large continental species commonly so called, which does not occur in Scandinavia, but is either the Bat hitherto called *Vesperugo* (*Vesperus*) *discolor*, or *V.* (*Vesperus*) *nilssoni*, and in all probability the former, the doubt in no way affecting the generic changes involved. In the 'Systema Naturæ' the same names were used. It is clear therefore that *Vespertilio* must be adopted for the "*Vesperus*" group of *Vesperugo*, and since it seems on the whole advisable that that group should stand as a genus distinct from true "*Vesperugo*," only two of our British Bats—the Serotine and the Parti-coloured*—will fall into *Vespertilio* in its new sense. The other members of "*Vesperugo*," as a matter of priority, must bear the easily remembered name of *Pipistrellus*. For those formerly called *Vespertilio* the proper name is *Myotis*.

Full references are given in the paper by Mr. Miller quoted above, as also in the case of *Barbastella* (1825), which antedates *Synotus* (1839).

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* Even this is doubtfully British.

INSECTIVORA.

The nomenclature of the true Shrews has already been explained in 'The Zoologist.'* That of the Water Shrew unfortunately involves a change, for the name *Neomys* was proposed as a generic title for it in 1829,† while *Crossopus* only dates from 1832.

CARNIVORA.

The *Scomber-scomber* names in this group have already been referred to, and that of *Putorius nivalis* for the Weasel explained in 'The Zoologist.' ‡

Among the Pinnipedia, the vexed question of *hispida* versus *fœtida* for the Ringed Seal has been settled by Mr. Sherborn's researches on the dates of the plates of Schreber's 'Säugethiere,' which give *hispida* a year's priority over its rival.

Trichechus is now universally admitted (even by people who refuse to adopt the alteration involved) to have been based on the Manatee. It should not therefore be used for the Walrus.

RODENTIA.

The British Squirrel, Short-tailed Field Vole, and Common Hare have all lately been considered to be at least subspecifically different from the typical continental forms, as is also the Hebrides Field Mouse; while another form of *Mus sylvaticus* has been shown to be the same as the Danish "*Mus flavicollis.*" These refinements, however, while of great interest to the technical student, do not directly affect the specific nomenclature, and need not therefore detain us here.

Among the Voles, it seems time that the generic separation of the Bank Vole from the others, long universally recognized by technical writers, should be adopted in more popular works. The first-named, with the "Ruddy Vole" of Northern Europe, and the "Red-backed Voles" of North America, may be distinguished by its semi-rooted teeth and more murine skull from the true Voles, of which our Water Vole and Short-tailed Vole are representative. The latter must of course be called *Microtus*, not *Arvicola;* while for the Bank Vole and its allies Dr. Coues's term *Evotomys* is available.

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* 1895, p. 62.

† Kaup. Entwick. Europ. Thierw. p. 117, 1829. *Leucorrhynchus*, p. 118, and *Hydrogale*, p. 123, of the same work, become synonyms of *Neomys*. They would all antedate *Crossopus*.

‡ 1895, p. 177. In his adverse note on this paper, Mr. Harting ignores the fact that, in Scandinavia at least, the Weasel does usually have some black hairs at the end of its tail. Shortly after the paper was published Dr. Collett was good enough to send to the British Museum a Weasel agreeing exactly with Linnæus's diagnosis, and this specimen I should be delighted to show to anyone still doubtful about "*Mustela nivalis.*"

Lastly, in the Hares we have a repetition of the ever-recurring Scandinavian muddle. Linnæus's *Lepus timidus* was of course the northern, varying Hare, to which alone the name should be restricted; the Common Hare should take Pallas's name, *Lepus europæus*.

ON SEXUAL DIFFERENCES IN THE FEATHERING OF THE WING OF THE SKY LARK (*ALAUDA ARVENSIS*).

By Arthur G. Butler, Ph.D., &c.

In Volume II. of 'British Birds with their Nests and Eggs' (p. 174), I have noted the fact that bird-dealers recognise cock Sky Larks, by the greater length of the second primary of the wing in that sex. I had intended to illustrate the well-defined sexual differences in this species by a process-block (*l. c.*), as I did in the case of the Linnet, but unhappily when the wings were needed Mr. Frohawk was utterly unable to obtain examples for illustration, whilst at that time I possessed the male wing only.

I now have before me eight wings, four of which (two right-hand wings of each sex) were secured, mounted, and kindly given to me by Mr. C. H. B. Grant, who shot these and other birds last December in Hampshire.

The wing of the male Sky Lark, as I have already stated elsewhere, is especially adapted for powerful and sustained flight, whereas that of the female is altogether weaker in construction; indeed, so greatly do the wings differ in old birds that a glance would enable the dullest observer to decide their sex; even in young birds the distinctions are well marked.

As is well known, the first primary in the Sky Lark (as in many Passerine birds) is very small; so that by a superficial observer it might easily be confounded with the coverts. The second, third and fourth primaries are, however, the longest in the wing, and in the male Sky Lark these three feathers terminate almost at the same level; thus when superposed there is hardly any noticeable difference, though the third primary is very slightly the longest. In the female the second primary is decidedly the shortest of the three and either the third or the fourth the longest, these three feathers in the female thus either forming an angle of which the extremity of the third primary is the apex, or a regularly graded oblique line. It is therefore not strictly correct to say that the second to fourth primaries of the Sky Lark are almost of equal length, inasmuch as there is frequently (probably always) a considerable discrepancy in the length of those of the female.

The secondaries of the male are distinctly longer than in the female and slightly less contracted towards the tips, which are bilobed (or, more strictly, bispatulate) in both sexes, the lobe or spatula terminating the outer web being longer in proportion to that of the inner web than in the female: this is especially noticeable in the larger and presumably older birds.

There can be little doubt that the slightly greater width at the extremity of these feathers and their more even termination offer better resistance to the air, in flight, than those of the female, and, combined with the increase of length in these feathers, help materially in supporting the bird when soaring.

A comparison of a series of Sky Larks in the flesh shows that the males are distinctly larger than the females, and, comparing the general outline of the expanded wings, it will be at once observed that those of the males are decidedly longer in proportion to their width than those of the females.

When one critically examines the feathering, to see where the principal difference in measurement exists, it at once appears that the uncovered portion of the primaries in the male is disproportionately greater than in the female, and the emargination of the outer web in the third and fourth primaries commences considerably farther from their extremities, about half the edge of the outer web in the exposed portion being emarginate in the males, and about two-fifths in the females.

Later on I hope to publish additional notes on sexual wing-structure in other birds. As a rule, the male wing is specially modified to enable the bird to overtake its female; but sometimes the development seems to serve the purpose of sustained rather than rapid flight; and it must be remembered that in certain birds (such as the Dunlin) in which the wings of both sexes agree in expanse and hardly differ in the structure of the feathering, the inferior size and weight of the body in the male give him a considerable advantage in flight.

ORNITHOLOGICAL NOTES FROM NORFOLK FOR 1897.

By J. H. Gurney, F.L.S.

It will be remembered that last year the autumn migration was very marked indeed, such exceptional visitors as the White-winged Tern, Greater Shearwater, Barred Warbler, Gull-billed Tern, Icterine Warbler, Bluethroat, Aquatic Warbler, Sabine's Gull, Greater Spotted Cuckoo, Pallas's Willow Warbler, Black-breasted Dipper, and Red-breasted Flycatcher followed each other in Norfolk in bewildering succession, to say nothing of what occurred further along the coast. The autumn of 1897 was a contrast to that of 1896; August produced a Pectoral Sandpiper and a Barred Warbler, and October one Tawny Pipit, while September and November were quite uneventful. The saltwort bushes at Blakeney were reported by visitors as being very destitute of birds, day after day "not a bird in them," to quote from a letter. The only approach to a rush was on Oct. 22nd (T. E. Gunn), and the next day Mr. Caton Haigh marked the influx of birds at Humbermouth ('Naturalist,' 1898, p. 26). The explanation of this dearth of migrants must be sought for in the unusual weather, and the wind. From the returns made by Mr. Arthur Preston, F.R.Met.Soc., it appears that in 1896 the prevailing wind in September was S.W. (mean estimated force 3.7); in 1897 it was N.W. In November, 1896, it was N.E.; in November, 1897, S.W. From his notes the annexed table is abridged (Trans. Norf. and Nor. Nat. Soc. vi. p. 196 *et seq.*).

	1895.	1896.	1897.
August	W.	N.	W.
September	S.E.	S.W.	N.W.
October	W.	S.W.	S.
November	S.W.	N.E.	S.W.
	Medium Migration.	Strong Migration. (Twelve rare birds).	Slight Migration.

But, as was pointed out last year, Norfolk naturalists have not yet altogether learnt how winds govern the visits of rare migratory birds. What we have learnt is that rain and wind and mist and unsettled weather bring birds to Cley and Yarmouth more than fine open weather. These conditions delay a great many Warblers, Bluethroats, &c., on their south-westerly journey, and blow Gull-billed Terns and Greater Spotted Cuckoos out of their proper course, so that Norfolk obtains them. When, on the other hand, the weather is fine, the autumnal migration proceeds on its regular normal east to west course, the travelling birds pass high over Norfolk and Suffolk without descending, and for the most part by night, and no one sees them. Now 1897 has had an autumn and winter of quite exceptionally mild and open weather, in Mr. Preston's words, the "persistence of anti-cyclonic conditions resulting in an almost entire absence of strong winds on our east coast." To this fine weather we may fairly attribute the paucity of all kinds of migratory birds, without seeking for a further reason.

JANUARY.

1st.—Two Common Gulls.

7th.—Shoveller at Hillington.

8th.—Green Sandpiper at Intwood.

9th.—Bean Goose at Yarmouth (A. Patterson).

11th.—Two Green Sandpipers at Haddiscoe (L. Farman).

13th.—Seventeen Shelducks on Breydon (A. Patterson).

23rd.—Snow-storm from the east. Partridges sheltering under hedges. Reports of Wild Geese and a supposed Polish Swan.

28th.—Good skating. A Little Auk brought alive to my brother at Northrepps, and about this time twenty others were notified in different places, one of which struck against a shed (Patterson), and another was picked up in a sheepfold, leading us for a few days to expect a repetition of 1895. Seventy Scoter Ducks were shot off Hunstanton; and seventy-eight Wood Pigeons were netted at Hempstead, which in some cases were voraciously filling themselves with the miserable remains of turnip-tops left by the farmers as too bad for pulling,

30th.—My son saw a Great Crested Grebe at Cley, and about this time Mr. H. Pashley—to whom these Notes are, as usual, very much indebted—announced a marked migration of Sclavonian, Red-necked, and Great Crested Grebes, all driven by the frost to the open water of the harbour. Local observers were reminded of the influx of Red-necked Grebes in 1865, and the same desire was observed on the part of everybody to kill them! I believe the migration extended to Boulogne, on the other side of the Channel.

During January a drake hybrid between the White-eyed Duck and the Pochard was taken on Saham Toney mere, and was subsequently recognized by Mr. A. W. Partridge as the so-called Paget's Pochard. It is now alive at Keswick, and agrees very well with my father's specimens of 1845 and 1859, which, with others, are fully described in Suchetet's 'Oiseaux Hybrides,' pp. 152, 711. It has a yellow eye, the breast, instead of being black like a Pochard's, is a rich rufous, both head and neck the same, and a white bar on the wing not quite so distinct as in Mr. Wolf's plate in 'The Birds of Norfolk.'

FEBRUARY.

2nd.—Quickly succeeding the Grebes, and from the same cause, flocks of Sky Larks were seen passing along our coast, escaping from the hard feeding-grounds inland, which after a fortnight's continuous frost and snow threatened them with starvation. At Sheringham, Beeston (H. Fitch), and Cromer numerous flocks were to be seen, winging their way S.E., and against the wind, no doubt as far as Yarmouth, where Mr. Patterson saw them, together with Fieldfares and Redwings, and on to the Suffolk coast.

3rd.—Sky Larks still coming over Yarmouth (Patterson).

4th.—Larks passing Blakeney, Cley, and Salthouse in thousands (Pashley), just as in January, 1879, when the same phenomenon was seen.

5th.—Larks still passing Cley.

8th.—Solitary Snipe shot near Cley (Pashley); an unusual date.

26th.—Wind strong. Egyptian Goose shot at Shadingfield (Daily Press).

MARCH.

9th—Chiffchaff and Wheatear at Cley ('The Field').

23rd.—Chiffchaff at Earlham (T. Southwell) and Rollesby.

25th.—Norfolk Plovers already extremely plentiful at Thetford (W. G. Clarke, Zool. 1897, p. 248).

26th.—Swift at Lowestoft, seen by Professor and the late Sir E. Newton; a remarkably early date.

29th.—Yellow Wagtail at Haddiscoe (L. Farman).

31st.—Several Martins at Hickling (M. Bird).

APRIL.

1st.—A cock Serin Finch caught in a garden on the Caister road, Yarmouth, and another seen, the pair having been about some days, and being at first taken for Siskins (W. Lowne), would, if let alone, possibly have nested. This is in every way a brighter example than the female, also in my collection, caught in April, 1893. The Serin seems to be an easy prey to birdcatchers, but, though often imported to London as a cage-bird, it is believed these occurrences are reliable, and, unless the birdcatchers have duped us, it has now turned up at Yarmouth six times. It is a common spring migrant to Switzerland, where it may be seen on fruit trees in gardens, but not after the fruit. [As additional to those enumerated in Suchetet's 'Oiseaux Hybrides,' three recently taken hybrids between the Linnet (*Acanthis cannabina*) and Greenfinch (*Ligurinus chloris*) may be here placed on record. On April 19th Mr. Connop obtained one of these anomalous birds, said to have been quite recently caught by a birdcatcher on Caister denes. On Oct. 26th another was taken at Rottingdean, in Sussex, and submitted to me by Messrs. Brazenor, of Brighton, who also received yet another, considered by its plumage to be a female, on Dec. 11th. Neither of these Sussex hybrids so much resembles a Greenfinch as the one my father had alive for some time. No. 10 of M. Suchetet's list.]

2nd.—Ten Shoveller Ducks, probably just paired, and a Garganey Teal, doubtless a summer migrant, arrived on Hickling Broad (M. Bird).

8th.—Grey Shrike shot at Barton Bendish (R. Clarke).

20th.—A Spoonbill arrived at Breydon, and remained a few days.

A Dipper seen at Selbrigge Pond, Hempstead, this month by Mr. Upcher; the second time only that this species has occurred in April.

MAY.

1st.—Mr. R. Gurney saw five pairs of Shelducks at Cley, and also washed-up bodies of a Sclavonian Grebe, a Little Auk, a Gannet, and several Puffins, Razorbills, and Guillemots.

2nd.—Two Spoonbills on Breydon (S. Chambers).

3rd.—Spoonbills still on Breydon, flying from there to Hickling (W. Lowne).

4th.—Thirty Great Crested Grebes on Ormesby Broad (W. Lowne).

6th.—Two Kestrel's eggs in a hollow alder tree at Hempstead; from these, though exposed to the sky, the old bird must, owing to the depth of the hole, have had considerable difficulty in rising. This example is perhaps worthy of being added to Mr. W. G. Clarke's abnormal nesting sites (Zool. 1897, p. 449). The eggs were only lying on chips.

12th.—A small flock of Curlew Sandpipers, some in very ruddy dress (H. Slater).

15th.—A youth of eighteen paddling his canoe on the Yare was attacked by a Mute Swan which had a nest: the craft was upset, and the canoeist had a narrow escape from drowning.

19th.—Five young Ray's Wagtails thrown out of their nest by a Cuckoo at Sutton, and about this time some young Pied Wagtails at Keswick were similarly ejected, but no Cuckoo was seen.

21st.—One Reeve, seen at a former well-known breeding place on our principal broad, by Mr. Lee.

23rd.—Spoonbill on Breydon (Chambers).

25th.—Perhaps the chief event of the year was the discovery this day of a nest of the Common Sandpiper (*Totanus hypoleucus*) with its four unmistakable eggs. It was found by Mr. Oswin Lee under a gooseberry-bush in the garden of an inn by the side of one of our broads, where he was photographing. The bird was plainly identified. This is a discovery of more than local interest. *Cf.* J. E. Harting, 'The Field,' April 28th, 1877, though there can hardly be a doubt that the Sandpiper has nested in Lincolnshire (J. Cordeaux, Zool. 1893, p. 304); with this exception, these are the first authenticated eggs in the eastern counties south of the

Humber, and the particulars have been communicated to Mr. Howard Saunders. Mr. Lee was too familiar with this nest in Scotland to require the eggs, which he therefore left to the old bird, but we never learnt if they hatched off. Mr. Lee had also the chance of watching a pair of Montagu's Harriers which were breeding, and of seeing the grey male hover some seventy feet above the marsh where the female was sitting, and then drop prey —probably a mouse—which its mate quickly rising caught in the air. Another discovery was a Willow Warbler's nest at Cringleford, almost five feet from the ground; Mr. Mitchell, however, refers to nests in Lancashire at heights of sixteen and fourteen feet. Here I ought to mention the abundance of Nightingales, which were also recognized by my son in April in Morocco, being then on their way to England. Also the finding of a Pied Wagtail's nest at Cringleford containing two young Cuckoos, and of a Spotted Flycatcher's nest at Braconash, also tenanted by two young Cuckoos, one of which ejected the other.

27th.—The Jackdaws have been uncommonly troublesome, taking fourteen young Pheasants from one coop; like Rooks, they are always worse in dry weather.

28th.—Dotterel, female, "telegraphed" at Holkam.

29th.—Spoonbill on Breydon (Patterson).

JUNE.

11th.—Hooded Crow seen by Mr. H. M. Wallis.

14th.—A pair of Tufted Ducks on Wroxham Broad (Wallis).

23rd.—A Green-backed *Porphyrio*, male, shot at Martham Broad, about two miles from the sea; taken to Mr. E. C. Saunders (*cf.* 'The Field,' 1897, July 3rd).

JULY.

2nd.—About one hundred Redshanks on a mud-flat near Duffell's Road, Breydon, considered by Mr. Patterson to be locally bred, the date being too early for migrants.

3rd.—Another Green-backed *Porphyrio*, male, shot at Martham Broad (Rev. M. Bird; *cf.* 'The Field,' 1897, Aug. 7th).

9th.—Five Shoveller Ducks on Breydon (Chambers).

12th.—Wind E. At eleven a.m. a Spoonbill appeared on Breydon, where at four o'clock it was to all appearance asleep, with a guard of about a hundred large Gulls on the uncovered mud, head to wind, the Gulls sitting, the Spoonbill standing with beak snugly tucked away into its scapular feathers. It permitted an approach to within seventy yards, and then flew, stretching its legs out behind with its long neck extended in front. The watcher says it remained on Breydon Broad until the 31st, when for security he drove it away, but in a few days, apparently liking its old quarters, it returned with two companions. On the north or Norfolk side of the broad the close time ends on Aug. 1st, but on the Suffolk side it lasts till the end of the month, so there a Spoonbill is, or ought to be, safe for some time.

20th.—A young Short-eared Owl shot at Horning, which had not quite lost the down (T. Southwell)—perhaps from the nest which was reported in May at Hickling.

21st.—A Green-backed *Porphyrio*, female, shot at Barton Broad (T. E. Gunn).

31st.—Spoonbill seen on Breydon (Patterson).

August.

3rd.—Another *Porphyrio* at Barton, as I am informed by Mr. W. Lowne, who received it, and perceived signs of confinement, of which more presently.

13th.—A Great Skua seen at Cley by Mr. Pashley, who also reported some Manx Shearwaters, and two young Buffon's Skuas.

18th.—Spoonbill seen at Cley by Mr. Barclay, and about this time one at Kessingland (T. Southwell). Pectoral Sandpiper shot on Breydon (Zool. *ante*, p. 25).

27th.—An adult female Barred Warbler shot by the Rev. Henry Slater as it dodged out of a bush on one of the sandhills on our coast ('Ibis,' 1898, p. 148). There can be little doubt that this is a species which is moving westward, and will become commoner.

30th.—A Richardson's Skua with white carpal joints and edgings to the elbow of the wing, the chin and patch on the belly also white, brought to Mr. Pashley. Probably the first of this albinic variety which has been obtained in Norfolk—an interesting bird wherever killed.

SEPTEMBER.

11th.—Another Green-backed *Porphyrio* shot at Barton Broad, as I learnt from Mr. Southwell while absent in Scotland. This is the fifth of these unfortunates in the same locality; but it is impossible to claim them as genuine migrants, for, though with one exception in perfect condition and plumage, they are probably some turned out by the Duke of Bedford at Woburn Abbey, in Bedfordshire. Mr. H. Saunders and I make it only 120 miles on the map in a straight line from Woburn to Barton Broad; the instinct which led so many to the same place, and that place so suitable to their requirements, is very remarkable. Whether they began their journey together, or not, it is morally certain that they did not all arrive at the Broad district at the same time, being far too noisy and conspicuous to remain long hidden. The first, on June 23rd, had probably just escaped, but in August Mr. E. Meade Waldo,—who, together with the Duchess, have kindly given every information,—informs me there were about sixty of these splendid "*Poules sultanes*' at large, full-winged, and already quite wild in Woburn Park. None were reported anywhere but in Norfolk, so far as I could learn, but a Purple *Porphyrio* was killed in Yorkshire (J. Cordeaux). If any more are turned out it would be a good plan to put dated aluminium rings on their legs, and we could then be sure of their owners and trace their wanderings. We can only promise them the same inhospitable reception they met with before, so long as the reed-mowers are allowed guns, for they, like all the rest of the tribe of Norfolk gunners, are incapable of leaving any bird alone, and the persecution of Montagu's Harriers and Barn Owls is especially regretable. If these *Porphyrios* had been unmolested they might possibly have nested, as they did in a semi-wild state at Mr. Meade Waldo's place in Kent.

21st.—A Shag, caught alive at Grimston Road by the side of the railway, is the only item in my diary calling for notice, a strange contrast to the list of rarities recorded for September, 1896, and to many of the same months in previous years.

OCTOBER.

7th. — Wind S.W. Grey Phalarope at Breydon Broad (B. Dye).

9th.—Wind N.W. A female Tawny Pipit in somewhat faded plumage was netted on Yarmouth denes, and exhibited at the next meeting of the Norf. and Nor. Nat. Soc. by Mr. Southwell, who took the opportunity of giving a *résumé* of the present status of Norfolk ornithology. It has been added to Mr. Connop's extensive collection, a catalogue of which Mr. Southwell has recently published (Zool. *ante*, p. 96).

12th.—An old Muscovy Drake attacked a Canada Goose with such ferocity that it completely disabled the latter, though three times its own size; the goose died from the wounds it had received.

19th.—Another of the chestnut Partridges—the variety named *Perdix montana*—shot by Mr. H. Galton at Sparham, about eight miles from where some were seen last year. The present specimen I am informed has the back and wings a uniform reddish brown colour without markings, breast bluish white, legs yellow, head normal. Two of those obtained by Col. Vivian last year had the whole of the breast and belly a rich dark chestnut, almost chocolate-colour, reminding me of a Grouse (*cf.* 'Field,' Jan. 15th, 1898). This is a more striking variety than the bluish or stone-grey variety, which is a pale bird with a cream-coloured chin, which also turned up this autumn in one or two places in Norfolk.

29th.—An Eider Duck watched on Breydon Broad by Mr. Patterson.

NOVEMBER.

Two Goosanders and four Mergansers are about the only things to be noted in this month; one Velvet Scoter, and an Eider Duck killed with a stone at Hemsby. Some hybrids between *Anas pœcilorhyncha* (the Indian Spot-billed Duck) and a Wild Duck on ponds at Keswick may be mentioned, though I do not think any of them are likely to escape and confuse county avifaunists.

DECEMBER.

10th.—A Coot on the river at Keswick (very unusual) and some Siskins on the alders, a bird of which there have been an unusual number at Yarmouth (Lowne). Two Magpies at Northrepps about this time, and a Waxwing catapulted at Wells (Col. Feilden).

31st.—A flock of about ten Shore Larks at a certain favourite corner by the sea sheltered from the north-west. This spot for years has been very seldom without these winter visitants, which have never numbered more than nine or ten. Here they stand by choice on the hardest mud, which the Sky Lark never seems to do. I have kept two or three Shore Larks for some time, and had one which developed a partiality for orange marmalade, being much annoyed by its stickiness, though liking its sweetness.

This month an adult Long-tailed Duck was shot at Wisbeach (Bland), and a crippled Pink-footed Goose was picked up.

A HITHERTO OVERLOOKED BRITISH BIRD.

By Ernst Hartert.

In a country so well explored and so well stocked with truth-seeking ornithologists as Great Britain, the addition of a bird "new to the British list" is always an event. Nevertheless several such additions have been made lately, but they were all stragglers from the far east or west; and it is, I believe, a long time ago that a resident breeding species has been added to the list. This, however, has occurred now with the discovery in England of *Parus salicarius*, Brehm.

It is well known that the Marsh Tits, to which this species belongs, consist of a number of local forms, partly recognized as species, partly as subspecies, by modern ornithologists. Thus over the greatest part of Central Europe we find a common Marsh Tit with a glossy, somewhat bluish-black head, generally called *Parus palustris*. To it belongs the common English Marsh Tit, which has been called *P. dresseri*, but which hardly differs in colour from West German and French specimens, but is a little smaller, and has a shorter bill. It is no species, but should be recognized as a subspecies by exact workers. From it the East German bird differs much more, especially in colour; but, strange to say, this fact has only recently been recognized. Different from these subspecifically allied forms are the Northern Marsh Tits, known as *P. borealis*, and replaced by a very closely allied form in the Alps. These Tits are always admitted to be different from the common Central European Marsh Tits. They differ at a glance by the colour of the crown, which looks less glossy and more of a brownish black. To this group also belongs *Parus salicarius*. This different colour is produced by a very different structure of these feathers. In the common Marsh Tits these feathers are deep black, rounded, and with strong glossy reflexes on the tips. In the Northern Marsh Tit and our *P. salicarius* they are brownish black, more lengthened, without strong reflexes on the tips, less compact, and less strongly pigmented. The tail in the common Marsh Tits is almost straight, only the lateral pair being a little shorter. The tail in *P. salicarius* and allies is strongly graduated, at least the two lateral pairs being much shortened. There are also differences in colour, form, and size of bill, *et cet.*; but they are not so easy to see, and I will not dilate upon them at length. With regard to *P. salicarius*, it may be added that it differs from *P. borealis* considerably in size, form of bill, colour of flanks, colour of edges of wings, and of the entire upper side. It is, however, as *P. borealis* is not known to occur in Great Britain, more important for British ornithologists to distinguish it from the ordinary British Marsh Tit generally called *P. palustris dresseri*, and I may therefore repeat that it differs from the latter chiefly in the colour and structure of the feathers of the crown, the form of the tail, and the more rufous flanks and more brownish edges of the secondaries, *besides its call-note being very different.*

P. salicarius, although described as long ago as 1831, has been lost sight of for a long time, and only quite recently our young friends on the Continent, Kleinschmidt and Prazak, have rediscovered it. I myself came across it long ago in the willow thickets of the Lower Rhine near Wesel, and was at once struck by the colour of its crown, which, however, I thought erroneously to be due to its being a young summer bird. No credit therefore is due to my observation, which was lost through my travelling far away into Africa and India, which ended for a time my studies of German birds. The specimen in question, which somehow lost its original exact label, was later given by me to the British Museum in exchange, and is there now. *P. salicarius* evidently inhabits dark willow thickets and other swampy woods, so dense that the sun hardly ever reaches the ground in them. It is found on the Rhine between Worms and Bingen and near Wesel, and at Renthendorf in Saxony. When Mr. Kleinschmidt was in England last autumn he recognized two British skins, from Hampstead, in the British Museum, as *P. salicarius*, and as these birds were just then in fairly good plumage, I at once tried to procure some specimens, but only succeeded in getting three from Finchley.

Neither were we able to find them anywhere near Tring, doubtless from want of suitable localities; nor could we procure any more from our correspondents. There can, however, be no doubt that there are many suitable localities in England where this bird is found, and I hope ornithologists will look out for it, and procure some specimens in autumn, *as soon after the moult as possible*, for it is a pity to shoot any when they are in abraded dirty spring plumage, which in Tits is rather poor, as everybody knows.

More detailed accounts and figures of *P. salicarius* can be read in the 'Ornitholog. Jahrbuch,' vol. viii. Heft 2, and in the 'Journal für Ornithol.' 1897, no. 2 (April). These articles show that the forms of the Marsh Tits by no means form a chaos out of which it is too difficult to find a way, but that with some study they become a very clear group. The British specimens of *P. salicarius*, it may be added, differ a little from continental ones in being somewhat darker above, and having shorter wings; but more material will be necessary to decide about the constancy of these characters. In any case there is no doubt that another species, not a subspecies, must be added, as *P. salicarius*, Brehm, to the British list. As this species is a resident bird, and as all Marsh Tits are resident birds, there can be no doubt that the *Willow Tit*, as this bird may appropriately be called, will be found all the year round in suitable localities in Great Britain and perhaps in Ireland.

NOTES ON BRITISH ANNELIDS.

By Rev. Hilderic Friend.

I. Distribution of Tubifex.

In nearly all old lists in which records are found we meet the two entries, *Lumbricus terrestris* and *Tubifex rivulorum*. Under these two names were included respectively all the common species of Earthworm, and all the usual bloodworms of ponds, ditches, and streams. As the old *Lumbricus* group has been worked out, new genera and species have been differentiated, so that to-day it would be inadmissible to make an all-round entry under this heading; similarly with *Tubifex*. Much has been done of late years by a few English specialists, and more by continental workers, to extend our knowledge and analyse results. The term *Tubifex* is now used not only in a generic sense, but has been raised to the rank of a family, under which nearly twenty well-defined genera are grouped. The difficulty at present is to know to what genus or species the old records are to be assigned. Evidently the only way to settle the matter is by making an accurate entry every time any one or other of the *Tubificidæ* is found. Having examined a good many specimens from various parts of England and Ireland, I think it may be well to place on record here the localities and species about which no question can exist. I do not profess to give a complete list of all the species I have myself examined, nor do I include habitats recorded by Benham and others; but simply put down a few indisputable items as a nucleus around which further records may gather as research extends. I have undoubted records from the following places of—

1. *Tubifex rivulorum*, Lam.—Gasworks, Idle, near Bradford, and banks of Aire around Apperley, Yorks; dykes at Pevensey and ditches at Dallington, Sussex; banks of Derwent and muddy backwaters around Cockermouth, Cumberland; Ocker Hill, Tipton, Staffs.

2. *Limnodrilus udekemianus*, Clap.—Received from Ballintoy, Ireland, and reported in 'Irish Naturalist,' 1897.

3. *L. wordsworthianus*, Friend.—A species new to science found by myself in a pond at Old Carlisle, Wigton, Cumberland. It lives in mud at roots of plants, and when taken coils up as *Tubifex* does. When examined under the microscope the absence of capilliform setæ at once shows it is not *Tubifex*, while the fact that it has more than two setæ in each anterior bundle differentiates it from *Stylodrilus*, a worm which is moreover readily distinguished by its appendant penis. The worm is from two to three inches long, but owing to its habit of coiling up is very difficult to measure. Four to six forked setæ are found in each of the front bundles. The blackish chloragogen cells begin in segment v. These cells often become detached and float in the cœlomic fluid. They are globular, and when injured burst and dissolve into a thousand tiny specks. The first nephridium lies in segment vii. Dilated hearts in viii–ix. The tail, as in most Tubificids, lighter in colour than the rest of the body. A pair of trumpet-shaped penis-sheaths about four (or five) times as long as broad. In the living worm the brain appears almost circular, or like a square with the two hindmost angles rounded off. It changes in appearance, however, with every new movement of the worm. Eggs were found in as many as six segments or more. A remarkable feature is found in the delicate papillæ with which the peristomium and fore part of prostomium are covered. I have named it after the poet, because I had the honour to be President of the Wordsworth Institute (in his birthplace) when the worm was discovered.

4. *Hemitubifex benedii* (D'udekem).—Received from Malahide, Ireland.

5. *Branchiura sowerbii*, Beddard.—Since Mr. Beddard reported this beautiful worm from the tank in Regent's Park, I have received specimens from Mr. Nicholson, taken in tanks from Kew Gardens, March, 1897.

I have also records for certain species of *Psammoryctes* and *Hyodrilus*, but as they are either new to science or still under investigation, the localities will for the present be held in reserve. As to habitats, it seems almost impossible to examine the wrong place if water and mud are present. The worms, however, have a special liking for ooze, vegetable and animal remains in a state of decay, the fœtid banks of streams in manufacturing districts, and similar spots. I should be glad if correspondents would supply me with gleanings from such like situations for further record.

II. British Enchytræids.

During a recent flying visit to Yorkshire I took occasion to visit a spot on the banks of the Aire at Apperley where I have often in former years found valuable material. The time of year was not favourable, as the worms had gone into winter quarters. I was fortunate, however, in finding along with a number of Tubificids one or two white worms, one of which is new to Great Britain. I have therefore to place on record *Fridericia striata* (Levinsen). The spot where the worm was found is connected with a mill, and more than one curious find has been made in the same locality in days gone by. This remark is made lest it should be supposed that a worm hitherto known only in Denmark and Germany would be unlikely to appear in Great Britain. Ude has indeed given it, since Mr. Beddard's monograph was published, as a native of Monte Video, whence it was brought by Dr. Michaelsen; so that there is no reason why it should not be found with us. It has from six to eight setæ in a bundle, but the peculiarity which struck me as most characteristic was the gizzard-like enlargement of the intestine in segment ix. My specimen has forty-five segments, the first five or six of which are striated, or marked by some irregular bands or vacuoles, usually three in each segment.

Since I reported the destructive *Enchytræus parvulus*, Friend, as an aster pest last year, I have found it by the score along with another species of *Enchytræus* and the pretty *Julus pulchellus* in my own garden, where between them they have almost entirely destroyed a row of celery originally containing about one hundred sticks. It is evident that there is still room for a good deal of research among our micro-annelid fauna.

NOTES AND QUERIES.

MAMMALIA.

CARNIVORA.

Stoats turning White in Winter.—I should be very much obliged if any readers of 'The Zoologist' could kindly give me any information as to whether the Stoats (*Mustela erminea*) in their respective districts have or have not turned white, either wholly or partially, during the present mild winter. Specimens of Stoats in the process of turning white would be gratefully received by me at the Natural History Museum, Cromwell Road, South Kensington, London, S.W.—G. E. H. BARRETT-HAMILTON.

Polecats in Suffolk.—Since I received the Polecat (*Mustela putorius*), lately recorded (*ante*, p. 22), I have had the opportunity of examining two more Suffolk specimens in the flesh, by the courtesy of Mr. Travis, the taxidermist, at Bury St. Edmunds; the first obtained at Cavenham on Feb. 2nd, the second at Mildenhall on Feb. 16th. Both were splendid specimens.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

RODENTIA.

Black Water Vole in Suffolk.—On Feb. 16th I received in the flesh a good specimen of the black variety of the Water Vole (*Microtus amphibius*), killed a few days previously in the stables of Hopton Rectory, which is about a mile from the Little Ouse, the Norfolk and Suffolk boundary. The correspondent who sent it to me for identification writes, "No one about here seems to know anything about it."—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

AVES.

Tree Pipit in January.—On the 23rd of last January, a very mild and sunny day, my attention was attracted by a Pipit perched on a low tree on Headington Hill, near Oxford. I had a good look at it with a binocular at the distance of a few yards, and another still better one when it flew across the road and perched on another taller tree. I have no hesitation in saying that it was a Tree Pipit (*Anthus trivialis*). Both this species and the Meadow Pipit are of course very familiar to me. The latter is common in winter on our low-lying alluvial meadows, but rarely occurs on the higher ground, and is certainly not at home in trees, as was the bird I saw on Headington Hill. I think it not impossible that the Tree Pipit may occasionally winter with us; it has been observed in November and also in February ('Yarrell,' ed. iii. vol. i. p. 570), and the extreme mildness of the past winter may well have helped to keep alive a stray individual who was hindered by some accident from joining his fellows in migration.—W. Warde Fowler (Lincoln College, Oxford).

Early nesting of the House Sparrow in the present mild Season.—In proof of the mildness of the season, I send you (Feb. 24th) a young *Passer domesticus*.* It was sent to me by a friend near here. His boy saw four together in the garden, and he made a snow-ball and threw it at them, knocking this one over. It must, I think, have been hatched in January.—H. S. B. Goldsmith (Huntworth House, near Bridgwater).

The Brambling in Hants.—Very large flocks of this handsome Finch (*Fringilla montifringilla*) have visited the neighbourhood of the New Forest, and in smaller quantities the woods on the other side of the Avon. Some idea of the numbers frequenting certain spots in the forest may be gathered from the fact of a man killing *twenty-nine*, and wounding others, at a single shot. This reads very like "murder," and to a true lover of birds it is a sad record, yet the fact remains; and I find that the numbers above quoted have in some instances been exceeded in other localities where the species has previously appeared, as in the case cited in 'Yarrell' from the observations of the late Mr. Stevenson, who records that *forty-five* birds were killed at a single shot near Slough, indicating how vast must be the flocks which sometimes visit us. In previous winters I have noticed the occurrence of this particular species only in very severe weather, when the birds frequented rick-yards and like situations in company with Sparrows, Yellow Buntings, &c.; but I am told that this season there is an unusually large crop of beech-mast in the forest, and this, notwithstanding the hitherto mild winter, may be the great attraction, for it appears to be a food of which the birds are very fond. Those I saw were literally "crammed" with portions of the beech-nuts; some of them had the whole seed in their beaks, and the birds were very plump and fat. The man who shot them told me there was a conspicuously dark bird amongst the multitude he saw feeding on the ground beneath the trees, but it seemed to have fortunately escaped the fate of its fellows. Very little variation was observable in those I inspected, except that the tawny markings upon the breast and wing-coverts were redder, and the black bars in the wings more intense in some than in others, but not more than would be expected in birds of a different age. In some previous records of this winter visitor I notice that a preponderance of males has been seen, thus resembling the winter flocks of its relation the Chaffinch; but in the present instance the sexes seem to have been pretty evenly balanced, although perhaps the males were slightly in excess—of the twenty-nine birds I saw twelve were females. About the same time as the large flocks were in the forest, a flock of some fifty or sixty birds was seen in the fir-woods on the western side of the river, but so far as I know these escaped molestation, and, strange to say, at the present time (Feb. 2nd) they seem to have entirely disappeared from both localities, whether gone further south or west to seek "new pastures" and less persecution, or (deceived by the spring-like weather) back to their home in the far north, I cannot say. One thing is certain, they did not stay long enough to consume all the beech-mast.—G. B. CORBIN (Ringwood, Hants).

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* Duly received by the Editor.

Abundance of Crossbills in the Severn Valley.—I have noticed more Crossbills (*Loxia curvirostra*) in the Severn Valley this winter than usual. I have several times counted as many as a dozen feeding at the same time on my lawn. It would be interesting to know whether observers in other parts of the country have noticed an abnormal increase.—R. H. RAMSBOTHAM (Monkmoor, Shrewsbury).

Rooks and Buttercup Bulbs.—While walking in a large meadow near Kingham last January, Mr. H. C. Playne and myself noticed that the Rooks had been turning up the bulbs of *Ranunculus bulbosus*, which lay scattered in every direction over the field. The same process had also been pursued in other fields in the neighbourhood. In every case the bulb had been partially eaten by a grub, and it was this of course that the birds were after. I have not been able to find the grub in the act so as to identify it. This performance of the Rooks is new to me, and also to Mr. O. V. Aplin, who has studied the habits of *Corvus frugilegus* in relation to agriculture. Were the birds in this case doing good or harm to the field? The grubs would seem to have been benefiting it by keeping down the growth of buttercups, which are acrid and unpalatable to cattle. On the other hand, the Rooks were finishing the work of the grubs by pulling the damaged bulb clean out of the ground. — W. WARDE FOWLER (Lincoln College, Oxford).

Rough-legged Buzzard near Ringwood.—In January, 1897, a specimen of *Buteo lagopus* was killed not far from the Avon in this neighbourhood, and its occurrence in this locality being, so far as I know, "few and far between," I thought it worth noting—although rather a stale record—but illness prevented my doing so previously. The bird was a noble specimen, although badly shot, and to a person not familiar with the species its soft Owl-like plumage appeared peculiar, so unlike the comparatively stiff and close-set feathers of a Peregrine Falcon, or even the softer plumage of a Harrier. The specimen in question had been feeding upon a rat, portions of which were in the "crop," whilst the tip of the long hairless tail of the rodent protruded from the beak of the bird. I had seen the species but twice before—first in 1884, again in 1894; but, if I recollect rightly, the present specimen had much more white about it than either of the former, and was, I imagine, an older bird.—G. B. CORBIN (Ringwood, Hants).

Nesting of the Hobby in Hants.—From a note on the above subject (*ante*, p. 24), it is gratifying to observe that this handsome little Falcon (*Falco subbuteo*) still holds its position as a breeding species in the county, certainly not the first occurrence of its kind. There was a time when the species regularly visited the New Forest, and nested in the woods, coming about the same date as the Honey Buzzard (*Pernis apivorus*), in May, and on one occasion (as mentioned by Wise, I believe) appropriating an old nest of the Buzzard in which to rear its brood. Only a few years ago I knew of a pair nesting within two or three miles of Ringwood, but the senseless persecution to which all this class of birds is exposed points directly to its growing scarcity and eventual annihilation as a breeding species. It was formerly so well known in the forest as to have the local name of "Van-winged Hawk" applied to it, and though I have never been fortunate enough to find a nest with eggs, yet in former years I have seen both old and young birds, and more than once watched their graceful evolutions as they chased the dragonflies over the forest pond in the daytime, or dashed after the dor-beetle (*Geotrupes vernalis*) as it disappeared in the increasing dusk.—G. B. CORBIN (Ringwood, Hants).

Little Bustard in Norfolk.—A Little Bustard (*Otis tetrax*) was shot by Mr. Goodwin at Feltwell, near Downham Market, Norfolk, on Jan. 25th last, and sent for preservation to Mr. Travis, Bury St. Edmunds, in whose shop I saw it in the flesh shortly after it arrived. It was in good condition and perfect plumage.—E. A. BUTLER (Brettenham Park, Ipswich).

Varieties of the Red Grouse.—Although I have examined a great number of European birds in abnormal plumage at home and abroad, I have never yet come across an albino of the Red Grouse (*Lagopus scoticus*). Numbers of this species come under my notice, and reports of so-called *white* Grouse reach me from time to time, but they always prove to be pale varieties, wearing, it is true, a bleached look, but far from possessing a really white garb. Such birds are usually females. Lord Lonsdale has one, shot on his estate near Haweswater by Major Parkin, of Ravencragg, in September, 1893. I examined two similar birds in 1894, procured near Girvan and in Avondale. A farmer named Forrester, of Saughtrees, near Bewcastle, shot another—an old hen—at the beginning of October, 1895. But a handsomer bird than any of the foregoing was shot last season on

Ellerside Moss, Lancashire, by Mr. R. Cavendish, M.P. The point about this bird—a male, which I examined in a fresh state—is, that while most of the upper and lower parts are either pure white or white faintly barred with pale cinnamon, the lores, sides of the head, and neck are rich chestnut-red, finely mottled with white. I forbear to supply a detailed description of this specimen because its owner, Mr. R. Cavendish, M.P., has generously consented to present his bird to the Carlisle Museum, in which it can be seen. The case in which it is mounted contains also two of the hybrid Red and Black Grouse mentioned in my paper on the interbreeding of those two species (Ann. Scot. Nat. Hist. 1897, pp. 15–17). — H. A. MACPHERSON (Allonby Vicarage, Carlisle).

Ornithological Notes from Mid-Hants: Autumn and Winter, 1897. —I forgot to mention in my last notes (Zool. 1897, p. 460) that two Hobbies came into Mr. Chalkley's hands, one from Basingstoke on July 20th, and another from the immediate neighbourhood of Winchester on July 30th. A gentleman living in south-east Hants informs me of the breeding of the Garganey in his neighbourhood this year (I may not give the more precise locality). He first saw the birds—two ducks and two drakes—in some marshy meadows on April 15th. After this he could only see one pair until May 11th, and after this only one male, which made a "jarring" noise when flushed. On July 7th he saw a hen bird with three young ones nearly as big as herself, and able to fly. They were not seen after Aug. 1st.

September was a very warm and rather rainy month toward the end. By the 23rd the water-meads some way down the river were swarming with Pied Wagtails, mature and immature, the latter preponderating. I saw the first Grey Wagtail on the 24th. Pied and Grey Wagtails came into the near water-meads on the 30th; and throughout the winter Grey Wagtails have been in great abundance. I saw the first inland flock of *Larus canus* on the 28th, some way down the river; and from this date the ploughed fields on the east of the valley have never been free from these birds. It was not until Oct. 14th, however, that the first flock paid a visit to the near water-meads; but from that date they have been more or less permanent there. On the 28th I saw a small flock of Peewits flying down the valley, as usual, in extended order; but I was surprised at the scarcity of these migratory flocks during this month. This autumn has been remarkable for the amount of Kingfishers in the neighbourhood. I myself have seen several in the water-meads, and Mr. Chalkley's death-roll of this bird is larger than ever.* I may also mention here that Mr. Chalkley has received a great many Goldfinches during September and October; I have not noticed the same abundance in the immediate neighbourhood. On

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* A circumstance much to be deplored.—ED.

Sept. 24th I saw several on some tall thistles in the water-meads. Mr. S. Davies sends me the following notes from Langston Harbour :—" Sept. 1st, several Turnstones and two Greenshanks seen. 16th, a good many Grey Plovers, Bar-tailed Godwits, and Knots about. Shot five Grey Plovers and two Knots. I saw four Little Stints near the harbour." On the 7th a Wryneck was shot at Basingstoke. Mr. Kelsall reports an Osprey at Barton Cliff, on the coast, on the 10th of this month. Mr. Stares, from Porchester, reports a flock of Pochard in a marsh on the coast on the 20th, and that he flushed a Quail on the 21st, while out Partridge-shooting. He also tells me that Mr. Carclers (the Portsmouth taxidermist) received a Black-tailed Godwit from Langston Harbour, and a pair of Ring Ouzels from Portsea Island.

October was another warm month, with preponderating south wind. The beginning of this month was notable for the large flocks of mingled Gulls, Rooks, Peewits, and Starlings, in the ploughed fields on the east side of the Itchen valley. I have watched these flocks a great deal, and it has struck me that the Starlings are not good friends of the other birds, and usually end in being driven away. The similarity of the other three birds' cries when together has also struck me. By the end of the month these flocks were quite broken up. The Gulls (*Larus canus*) that came inland at the beginning of the month had the brown on the wings reduced to a minimum, but those that arrived at the beginning of November had the brown well developed. This species, though very shy of human beings, follows the plough with the greatest confidence. On the 14th I traced the Itchen north of the town, There were a great many Dabchicks on the river, but I did not see a single Pied or Grey Wagtail, or any Gulls, except a few passing over. I saw six Snipe (*Gallinago cœle[illegible]s*) started from a bed of tall reeds on the river by some dogs, and two parties of Geese (sp. ?) flying high along the valley ; also more flights of Peewits, going in an extended line. On the 15th I noticed the first influx of Chaffinches (male) into the water-meads. On the 18th I saw the last Swallows at Winchester, and on this date I saw a Sedge Warbler, on the river about seven miles south of Winchester. This is a late date, and Mr. Chalkley says that when fishing on the Itchen during the first week of this month, he saw a great many of these birds about. Mr. Kelsall reports the last Swallow at Milton, near the coast, on the 23rd ; and Mr. S. Davies sends me the following notes from Langston Harbour :—" Oct. 2nd, shot two Knots. A flock of twenty Wigeon came in. One Grey Plover and a large bunch of Knots. Oct. 12th, last Swallow seen." Mr. Chalkley received the following interesting birds during the month :—Kite, adult female from Shoeburyness ; on the 2nd, a fine female Peregrine from Micheldever ; 4th, two Curlews from Longwood, two miles from the town ; 13th, a Golden Plover from a flock passing over

Bishops Sutton; 14th, a Hawfinch from Basingstoke. With regard to the Kite, a species which Mr. Chalkley has not seen for twenty years, I certainly incline to his view that it is a *bonâ fide* wild bird. Although part of the tail-feathers are shot away, the remaining tail- and wing-feathers are not at all rubbed. Mr. Stares tells me he saw about ten Hooded Crows along the coast at Browndown, the first he has seen this autumn (Oct. 10th).

November was a very unsettled month, with a preponderating north-east wind. On the 3rd a good many Meadow Pipits came into the near water-meads, and I noticed a Carrion Crow among a great many Rooks, Jackaws, and Starlings. It moved off immediately. The Jackdaws are fond of perching on the Cows' backs. On the 4th Mr. Lane Claypon reported a Herring Gull among the others in the water-meads. On the 8th a party of Dabchicks paid a visit to the near water-meads, but left the same day. On the 10th Peewits were still on the move, a party of four flying south down the valley; I saw another party on the 15th. I watched a Kestrel on this date playing in the most systematic manner. It pretended to be hunting for food, hovering for several minutes over nothing at all, and then swooping away to repeat the same operation at a distance. I watched this going on for quite half an hour; then I went away, after having satisfied myself that there was no animal against which these manœuvres were directed. I left it still hovering. On the 22nd I noticed an increase in the number of Larks and Chaffinches in the near water-meads. On the 23rd I paid a visit to Fisher's Pond, and noticed that the Coots were still there. I also saw, in the wood bordering the pond, a great many Long-tailed and Blue Tits, and also a few Magpies. Mr. Stares sends me the following notes from Porchester:—"Nov. 3rd, saw a flock of Grey Plovers in Langston Harbour. 6th, shot a Quail on Portsdown Hill; it was a hen bird, and its crop contained plantain seeds. Whilst out waiting for Ducks at night on the mud-flats, I heard birds migrating over head, the calls of Fieldfares and Thrushes being especially distinct. 16th to 20th, good number of Wigeon about Portsmouth and Langston Harbours at night. 27th, very large flocks of Pigeons about the woods, mainly composed of Stock Doves and a few Ringed Doves among them." Mr. Stares was also informed of a Fire-crested Wren caught on board a steamer at Spithead, and a Spotted Crake killed by flying against telegraph wires in Portsmouth Dockyard.

December. The weather was cold and still for the first part of the month, but subsequently very wet. Mr. Lane Claypon tells me that Pied and Grey Wagtails remained numerous in the water-meads, while the Gulls were fairly constant, with occasional very large flocks (6th, 7th, 13th, 19th). On the 5th he reports an enormous flock of Starlings, on a ploughed field a mile south of the town; on the 9th a flock of Peewits going south, and a

Kingfisher and some Long-tailed Tits at St. Cross. On the 13th he writes:—"At about 5.15 p.m. a Pied Wagtail flew into a room where I was, no doubt attracted by the light. After flying about in a startled manner, it finally went out." On the 15th Mr. L. Claypon saw the first Reed Buntings in the near water-meads, and on the 16th a large flock of Peewits, fully a hundred, heading south. On the 19th he reports a flock of 500 Common Gulls near the town. Mr. Stares reports the following birds:—Dec. 2nd, saw a Great-crested, Red-necked, and several Little Grebes, on the Hants side of Chichester Harbour; also a pair of Tufted Ducks. 27th, a small flock of Siskins, feeding on the seeds of alder near the Hamble river. 31st, a male Blackcap, feeding on some rotten apples that had been thrown out for the Blackbirds; it has been here (Porchester) for quite a fortnight, and comes and feeds daily within two yards of the windows. It is still here (Jan. 4th). I may mention that I saw two Blackcaps near Winchester, on Oct. 18th.

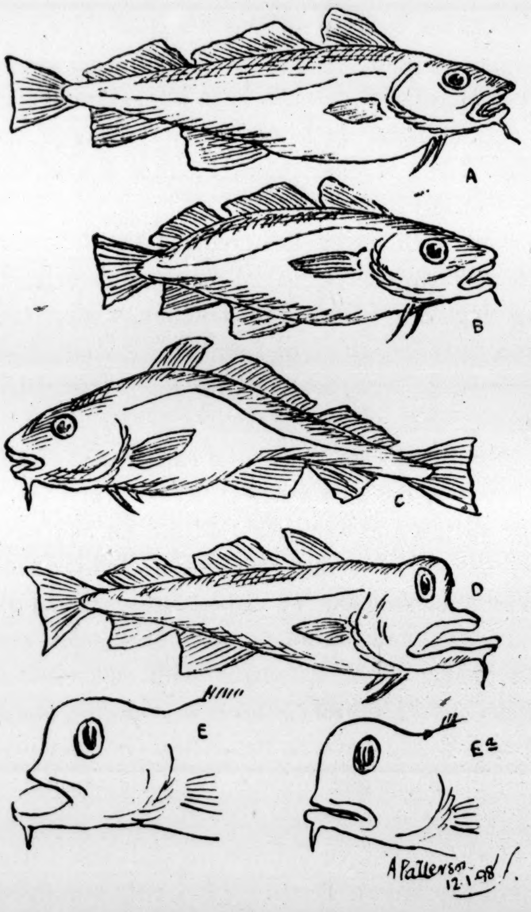
During the last two months Mr. Chalkley has received the following birds:—Nov. 13th, Great Spotted Woodpecker, from the near neighbourhood; 15th, Pin-tailed Duck, from Avington; 18th, Hen Harrier, male, from Andover; 23rd, Long-eared Owl, from Avington, and one on the 27th, from the neighbourhood; 24th, Saddle-back Crow, from Avington. Dec. 16th, Golden Oriole, from Avington.

The following are some of Mr. Stare's notes for the earlier part of the year, which I was not able to insert in my own notes then:—"April 1st, a Tawny Owl, with eggs, sitting; 6th, a punt-gunner told me he had seen to-day, in Langston Harbour, a flock of about two dozen Red-breasted Mergansers (he called them "Spear-wigeon"); 19th, large flocks of Swallows pitching in the reed beds, and numbers of Nightingales and Warblers about the hedges and fields; 24th, Redshank with egg, sitting. Saw several Swifts. Small flocks of Whimbrel (*Numenius phæopus*) about Langston and Portsmouth Harbours, and several Bar-tailed Godwits just beginning to get the red plumage. Flocks of Yellow Wagtails about the marshes. April 26th, Ringed Plover with young. 27th, on a piece of water not far from here (Porchester) I saw three White-winged Black Terns (*Hydrochelidon leucoptera*), one of the Marsh Terns. They only remained there one day. They are very elegant birds, flying about over the reed-beds and open water hawking after insects. Sometimes they would come and settle on some old posts that were standing in the water. May 19th, saw a Hoopoe (*Upupa epops*). I am told it had been about the spot where I saw it for more than a fortnight. 25th, Wood Wren with eggs. July 2nd, large flocks of Gulls in Langston Harbour, composed of Herring, Lesser Black-backed, and Kittiwake Gulls, one Great Black-backed Gull amongst them. 10th, saw a Hobby in the woods near Titchfield. 19th, pair of Pigmy

Curlew in Langston Harbour, among a flock of Dunlins. Aug. 2nd, saw a few Greenshanks in Portsmouth Harbour."—G. W. SMITH (College, Winchester).

PISCES.

Malformed Codfish.—In the course of my observations on the fishes of this district, variations in the forms, or deviations from the normal shape in certain species, have come from time to time under my notice. The tendency to abnormality appears to be greater in the Cod (*Gadus morrhua*) than in any other species. Occasionally a Haddock or a Gurnard has presented itself as an example of the grotesque, but it is the Cod, whose numbers are certainly not in excess of any other common "round" fish, which leads the way. The specimens in the illustration are amongst the number that have come under my notice, and are as follows :—



A.—The normal shape.

B.—A 15½-inch Codling netted off Gorleston beach, Jan. 11th, 1898. The tip-end of the pectoral fins was exactly midway between the extreme ends of the tail and snout. The fish was only three-fourths the length it should have been for the size of the "head and shoulders."

C.—A deformed example, seen on a fish-stall of this town, Jan. 20th, 1890. It looked a veritable Æsop. Length guessed as about 20 in.

D.—An example of the "Bull-dog" variety, taken May 1st, 1894. Length, 16 in.

E.—On Jan. 17th this strange-looking specimen was hooked by a sea-angler fishing from the jetty. Length, 16 in. It is a curious fact that most of the *Gadus* varieties I have examined measured this length. E *a* shows the mouth closed.—A. PATTERSON (Ibis House, Great Yarmouth).

CRUSTACEA.

The Struggle for Existence among Hermit Crabs.—It is well known that the Hermit Crabs (*Paguridæ*) have occasionally royal battles for the possession of some old empty shell which serves them for a temporary lodging, and the following account is of a proceeding which I one day witnessed on the Hastings beach. I had been hunting for Hydroids at low-tide, and just as I was leaving I noticed a mob of Hermit Crabs. In warm weather these are usually plentiful enough, but it struck me that on this occasion they were collected together for some purpose. In fact, so preoccupied were they, that they did not pay any attention to me, though I was stooping over them. The Crabs were of different sizes and in various shells—*Purpura*, *Natica*, Whelk, &c. One which occupied a *Purpura* was rather a little fellow, and ensconced behind the thickened mouth of the shell he looked very snug and secure. He was evidently the central figure of the group, and was endeavouring to edge away from those around him. At length up stalked a big burly fellow, and seized him by the front leg at the joint. Then commenced a series of smart tugs, perhaps half a dozen, and then a slight pause, after which the tugging commenced again. This kind of thing continued I suppose for ten minutes, and if only fair means had been used no doubt the assailant would have had to desist, but it seemed to strike the intelligence of one of the bystanders that in rendering assistance he might also serve his own ends; so, coming forward and going behind the *Purpura* shell, he seized hold of it. Then began again the tugging by the original offender. This continued for some time, but even with this assistance no impression seemed to have been made upon the little fellow in the deadly grip of his antagonist, for he remained almost out of sight, and firm as a rock. Then another volunteer stepped out of his own accord and seized hold of the shell of No. 1 assistant. There were thus two Hermit Crabs resisting the pull of the original assailant. No sooner had the second assailant lent a hand than the victim was instantly " whipped out " of his shell like a cork from a bottle! and directly the little fellow had been extracted from his shell No. 1 assistant slipped quickly out of his domicile and scrambled into the empty *Purpura*, thus ousting entirely the original aggressor, and made off with his ill-gotten property.

It would appear, on considering the above, that the Hermit Crabs must have very decided preference for certain shells; for, considering that all the other parties concerned were properly domiciled, why should they have so coveted this particular shell? In this case, if I remember rightly, the shells of the aggressors were *Naticas*, that is to say, shells with wide open mouths, and not likely to afford anything like the protection that a *Purpura* would offer with its greatly thickened and dentated lip, and a stout shell into the bargain.—P. Rufford (The Croft, Hastings).

NOTICES OF NEW BOOKS.

A Text-Book of Zoology. By T. JEFFERY PARKER, D. Sc., F.R.S.; and WILLIAM A. HASWELL, M.A., D. Sc., F.R.S. Macmillan & Co., Limited. Two vols.

THIS notable publication appears under sad and unique circumstances. The death of Prof. Parker, which occurred just after the last sheets were passed for press, has been widely deplored. The two authors were respectively Professors of Biology at Otago and Sydney, were separated from each other during the greater part of their collaboration "by a distance of 1200 miles, and the manuscript, proofs, and drawings have had to traverse half the circumference of the globe on their journeys between the authors on the one hand, and the publishers, printers, artist, and engravers on the other."

When we call to mind our school-day text-book, which was that of T. Rymer Jones, we can well appreciate the difference of the zoology of to-day and then, by an even cursory examination of these two portly volumes; and although 'The Zoologist' is largely representative of what is generally understood as Ethology or Bionomics, our readers must still frequently require a handy authority for the solution of many zoological problems which depend on a knowledge of Morphology, Embryology, Organic Evolution, Palæontology, Distribution, and Physiology. This text-book is certainly for the student. "In spite of its bulk, the present work is strictly adapted to the needs of the beginner"; but besides this purpose—and we all have not the youth and time to go through a new course—its value is to be estimated as a work of reference.

Our authors divide the animal kingdom into twelve "phyla" or primary subdivisions:—Protozoa, Porifera, Cœlenterata, Platyhelminthes, Nemathelminthes, Trochelminthes, Molluscoida, Echinodermata, Annulata, Arthropoda, Mollusca, and Chordata. Each phylum where necessary is again reduced to classes. As an illustration the Arthropoda are subdivided into (1) Crustacea, (2) Onychophora—*Peripatus* only, (3) Myriapoda, (4) Insecta, (5) Arachnida. Each group is represented by an individual, of which a complete and exhaustive examination is made, so that a series of analytical types afford a clear insight into the real inwardness of the classification. Thus *Brachionus rubens* is made a representative of the Rotifera, and a Cockroach (*Periplaneta americana*) is used to focus the structure of the Insecta; and in this way if the student is unable to obtain the identical species for examination, an allied form will easily be procurable, and will serve a similar purpose. In Aves, which form Class V.* of the phylum Chordata, the Common Pigeon (*Columba livia* var. *domesticata*), is chosen as the subject for demonstration. The whole class is divided into two subclasses—ARCHÆORNITHES (Mesozoic birds) and NEORNITHES. The last form two divisions: Ratitæ—flightless Neornithes, including Emus, Cassowaries, Rheas, Ostriches, &c.—and Carinatæ, in which, "with the exception of some flightless species, the sternum has a keel," &c. The classification thus runs from the Emus, Cassowaries, Moas, Ostriches, and allied forms now extinct and in the domain of palæontology, through the Divers, Petrels, Herons, Ducks, and Geese, when we reach the Accipitres. Then follow Gallinæ, Grallæ, Gaviæ, Limicolæ, Pterocletes, Columbæ, Psittaci, and we arrive at the Owls (Striges). After these Picariæ, when the system ends with the Passeres. Whatever may be the opinion of ornithologists as to this arrangement, they will doubtless agree with the authors that—"In respect of range of structural variations, the entire class of Birds is hardly the equivalent of a single order of Reptiles. Among existing Birds the Emu and the Raven, which may be said to stand at opposite ends of the series, present nothing like the anatomical differences to be found between a common Lizard and a Chameleon, or between a Turtle and a Tortoise."

The chapters at the close of the second volume are devoted to those topics which interest all zoologists, and prove a charm to most readers. On the subject of "Distribution" excellent point is made by the comparison of the faunas of Great Britain and New Zealand. These two insular areas are not widely different in size, have each a temperate climate, a physiography of considerable resemblance, a humidity well marked, and yet possess totally dissimilar faunas. Moreover, Great Britain has a fauna almost common to the adjacent European continent; whilst that of New Zealand differs from the neighbouring Australian to a greater extent than obtains in the faunistic relationship of England and Japan. This may be trite information, but it cannot be too sufficiently emphasized.

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* In error styled Class VI. in text, vol. ii. p. 350.

The "Philosophy of Zoology" is treated in a temperate and judicial manner; whilst the true principles of Evolution and its methods as expressed by "Natural Selection" with its handmaid Mimicry, &c., are clearly acknowledged. But it is well observed: "The generalisations forming the subject-matter of the philosophy of zoology may, in some instances, be so clearly and directly deducible from the data concerned, that it is scarcely possible for anyone conversant with the facts to refuse credence to the generalisation. But in other cases the conclusion is a matter of probability only, and one conclusion or another may be regarded as the more probable, according to the estimate formed of the relative importance to be attached to different sets of the facts or to different aspects of the facts."

The "History of Zoology" is necessarily a compressed digest, but we are glad to see that our countryman John Ray is recognised as the first to grasp the specific generalisation, though his imperfect efforts were afterwards developed and perfected by Linnæus.

We will conclude this notice with the last words of our authors. "Nothing is more certain than if the new 'Natural History'" (the study of living animals under natural conditions) "is to be superior to the old—more scientific, more concerned with the solution of general problems—it can only be by utilising to the full all that has been learnt in the laboratory in the departments of anatomy, physiology, and embryology."

A History of Fowling: being an account of the many curious devices by which Wild Birds are or have been captured in different parts of the World. By the Rev. H. A. Macpherson, M.A. Edinburgh: David Douglas.

There are certain subjects about which everyone knows a little, which possess local specialists, but which have never been treated in an universal manner. Historians are familiar with this phase of undigested information, and with this want of monographic treatment. Anthropology is a science which affords a special instance of how the accumulation, selection, and arrangement of facts can by competent and judicious authorities be made original contributions to the knowledge of our own species. The history of Fowling was a subject that could only be treated properly by an ornithologist, but was one that few ornithologists would consider came within their vocation. It was an opportunity for a "book" in its real sense; and we are glad that Mr. Macpherson essayed the task, and not a light one. This collection of facts, with their orderly arrangement and subordination to the aim of the work, is more than equal to the collection of species and their subsequent taxonomic treatment; and our author informs us that his "plan has been to read through every ornithological work that I could find in the five or six languages which are all that I can possibly translate." Besides these, books of travel must and have been consulted, and we now possess a standard work which the reader can from time to time annotate himself with those stray records which do not come to all alike; for which purpose we are thankful for wide margins, good paper, and a book that will *almost* open flat—though perhaps this is too much to expect in modern binding.

The introduction contains, under the title of "The Literature of Fowling," references to little-known works in English, German, French, Greek, Spanish, Italian, Norwegian, Russian, and Japanese literature; and also a dissertation on the principal implements used in the art of fowling. The systematic arrangement of the birds "is partly based upon that which my colleagues and I adopted in writing the *Avian* portion of the 'Royal Natural History,'" commencing with the family Corvidæ.

There seems a natural inclination on the part of most races of mankind to practise the snare of the fowler as a sport; and when commerce steps in and bribes the baser passions, the pursuit assumes a form of slaughter. Even in India the White-breasted Kingfisher (*Halcyon smyrnensis*) is easily caught by the natives; at Vancouver Island the Indians successfully capture Brent Geese; in Australia the Black Swan (*Cygnus atratus*), when in moult, can be rowed down in a boat; the Japanese are expert decoyers; Pheasants are snared all throughout the East; while Willoughby writes that the Icelanders of his day were in the habit of snaring the Great Northern Diver. It may thus be seen that a history of fowling must embrace a wide area of observation, and might be treated ethnologically as well as ornithologically; in fact, should Mr. Macpherson issue a supplement to this very interesting work, or bring out a new edition of the same, he might with advantage peruse some ethnological literature, from which he would doubtless glean fresh facts.

This publication is a standard one, and is of more than ornithological interest; it will be consulted and quoted by the ever-increasing number of anthropologists who study the evolution of human crafts and customs.

Note.—We have received the following communication from the author:—

The History of Fowling.—I should be glad if you would kindly allow me to correct, through 'The Zoologist,' a slight misconception which is embodied in the above work. The description of taking the Bush Warbler (*Cettia cantans*) in Japan, supplied at page 129, should refer to the Chinese Great Reed Warbler (*Acrocephalus orientalis*) instead of to the former species. Both are favourite cage-birds in Japan.—H. A. Macpherson.

Elephant-Hunting in East Equatorial Africa. By Arthur H. Neumann. Rowland Ward, Limited.

Although the principal details of this book are of an Elephant- or ivory-hunting description, its perusal will provide the zoologist with some facts and observations not only relating to the huge Proboscideans who were the principal aim of the expedition, but also as regards other animals with which the writer came in contact. There are also various conclusions scattered in its pages as to the restricted areas of Antelopes, &c., which will serve as material towards discussing some of the problems of specific separation.

Mr. Neumann started from Mombasa, and his two expeditions were confined to Eastern Equatorial Africa, a region still teeming with big game. He gives a verbal picture of the profuse animal life he met with on one of his excursions from El Bogoi. A large patch of thorn forest, fairly open, was "simply filled with Elephants standing, mostly in clumps, here and there all through it." "Such a sight I never beheld. It reminded me of pictures in ancient books on South African hunting. In the foreground were some Grant's Gazelles and a large Grevy's Zebra; the bush seemed full of vulturine Guinea-fowls and Francolins; 'paa' (*kirkii*) were everywhere, and here and there one caught sight of a *walleri* or two making off, while small birds were in clouds. All the teeming life in this oasis was due to the life-giving moisture from the little stream." It is to be hoped that this fauna may not as rapidly share the fate of that of the more southern region.

The author considers that the neighbourhood of the small lake, called by the natives "Kisima" and situated south of Lake Rudolph, is the extreme northern limit of *Gazella thomsoni* and *Bubalis jacksoni*, and that the Lorogi Mountains "here form a distinct line of demarcation in the geographical distribution of certain species."

Among the birds common to the shores of Lake Rudolph is the Large Crested Pauw (*Eupodotis kori*), in connection with which Mr. Neumann records an interesting observation. The Rosy Bee-eater (*Merops nubicus*) has the habit of riding on the back of the Pauw. "It sits far back, on the rump of its mount, as a boy rides a donkey. The Pauw does not seem to resent this liberty, but stalks majestically along, while its brilliantly-clad little jockey keeps a look-out, sitting sideways, and now and again flies up after an insect it has espied, returning again after the chase to 'its camel'—as Juma not inaptly called it." This Bee-eater was also seen sitting on the backs of Goats, Sheep, and Antelopes, but the Pauw seemed "its favourite steed."

There are of course many habits of the Elephant to be found scattered in the details of its destruction, but one becomes satiated by the recital which in the excitement of the field is "sport," but in the pages of a book reads "slaughter." A few more excursions in this region of sportsmen with the skill and pluck of Mr. Neumann, and the Elephant must either "move on" or be practically exterminated. The author is of opinion that, in the region he hunted, the Elephant "attains his greatest dimensions both as to bodily bulk and weight of ivory," and this estimate is largely based on the records made by Selous in South Africa.

Lepidopterists will find in an appendix a list of the Rhopalocera collected during the expeditions. This has been compiled by Miss Sharpe, who describes three new species, which are amply illustrated in a coloured plate.

EDITORIAL GLEANINGS.

At the meeting of the Zoological Society held on Feb. 15th, Mr. W. P. Pycraft read the first of a series of contributions to the Osteology of Birds. The present part (of which the following is an abstract) related to the *Steganopodes*:—

"The fact that in the Tropic-birds, Cormorants, Gannets, and Frigate-birds all the toes are united by a common web, has led to the belief that these forms are closely related; they form the suborder *Steganopodes* or *Totipalmatæ* of authors. A comparison of the osteology of the group confirms this opinion. *Phalacrocorax* may be taken as the type of the suborder, which may be divided into three sections according to the form of the basitemporal plate. In *Phalacrocorax* and *Plotus* this is seen in its most generalised form, and agrees with that of the *Ciconiæ*. *Sula* is the nearest ally of the Cormorants, as is shown by the close resemblance in the form of the fused palatines, and of the pectoral and pelvic girdles and limbs. *Sula*, it is evident by the form of the basitemporal plate, leads to *Fregata*. The Pelicans resemble the Cormorants and Gannets in the form of the palatines—which are, however, more highly modified than in these families—as also of the sternum, lachrymal, and nasal hinge. *Phaëthon* is the most aberrant of the group, but agrees most nearly with the Pelicans in the form of the basitemporal plate, which differs from that of the preceding families. Its sternum, though distinctly Steganopodous, differs in that the free end of the clavicle does not articulate with the coracoid by a flattened facet. *Phalacrocorax*, it is contended, must be regarded as the typical Steganopod. *Sula* and *Fregata* fall into places on the one side, *Pelecanus* and *Phaëthon* on the other side of this family. *Phaëthon* and *Fregata* represent the two extremes of the suborder; they alone retain the vomer, and in them the modification of the palatines and of the maxillo-palatine processes is comparatively slight."

The Annual Report, 1896–7, of the Director of the Field Columbian Museum, Chicago, has reached this country. We read that very much work—essential to a museum—has been done in identification; inventorying, cataloguing, and labelling; work that, as the Director remarks, "is uninteresting, plodding, and tiresome, with nothing that appeals to the student and expert, or stimulates him to effort." With reference to the recent expedition to Somali-land, under Mr. Elliot:—"The collection obtained is very valuable, probably the most important, certainly so as regards quadrupeds, ever brought out of any country by one expedition, and consists of about two hundred mammal skins, three hundred of birds, numerous reptiles, and about half a barrel of fish, obtained on the coast and at Aden. Skeletons of every species, in certain cases two or three of the same species, were preserved, and casts of heads and parts of bodies showing the muscles of the large animals were made. These will be beyond price when it is desired to mount the species, exhibiting as they will every muscle, artery, and, in the case of heads, the proper lay of the hair and contour of the face. Besides these we have over three hundred negatives of the people we met, the scenery of the country through which we passed, and the animals, living and dead, which we had obtained. These last will be of as great value to the taxidermists in their work as the casts, and they are both unique assistants, such materials never before having been secured." We also learn that in the museum "the spirit formaline in which the specimens of fishes were preserved failed under the extreme low temperature which the exhibition halls reached at night during the winter, and alcohol has been or is to be substituted in all instances, and the specimens placed upon upright plaster slabs within the jars, thus showing them to better advantage."

"THE final plans for the location of the buildings, ranges, dens, aviaries, and other enclosures for animals, and the ponds, walks, roadways, entrances, &c., for the Zoological Park in South Bronx Park, New York City, were lately submitted by the New York Zoological Society to the Department of Parks, and approved and adopted by the Park authorities. The Society has raised 65,000 dols. towards the 100,000 dols. necessary to receive from the city an appropriation of 125,000 dols. for laying out the grounds and providing drainage and water supply. The funds provided by the Society—namely, 250,000 dols. to be raised during the three years' limit—are to be applied to the erection of buildings and the purchase of collections. It is a work that may well interest people residing beyond the limits of New York City. The area allotted to the Zoological Park is four times larger than that of the largest zoological garden in Europe, and with the care that has been bestowed upon the plans, in order to secure the best results attainable, there is no reason why this country should not in due time be in possession of the best zoological garden in the world" (The 'Auk').

IN last year's volume (1897, p. 44) we drew attention to an enumeration of "The Snakes found within fifty miles of New York City." We have now received from the same source—the 'Proceedings' of the Linnean Society of New York—a paper on "The Fishes of the Fresh and Brackish Waters in the Vicinity of New York City," written by Mr. Eugene Smith. The area included "embraces most of the territory immediately tributary to New York Harbour taken in its largest sense." The summary is as follows:—"Native fresh-water species known, 24; introduced species, 11; brackish water and anadromous species, 26. Total, 61. Adding thereto the probably occurring native species (12) gives a total of about 73, belonging to 54 genera and 24 families. This shows that while the number of species is not large, the families are well represented." Of introduced species, the Carp (*Cyprinus carpio*), Gold-fish (*Carassius auratus*), and the Brown Trout (*Salmo fario*) are of Eurasian origin. The Quinnat Salmon (*Oncorhynchus tschawytscha*), from the Pacific coast, seems not to have become established.

In the official 'Wealth and Progress of New South Wales,' recently issued by the Agent-General, some interesting facts are available concerning the treatment of noxious animals in that colony. For the destruction of these, other than Rabbits, the amount paid by stock-owners in 1896 was £35,934. The numbers and animals for the year were:—

Kangaroos	80,639	Native Dogs	13,138
Wallabies	655,309	Opossums	7,142
Kangaroo Rats	160,808	Eagle Hawks	8,810
Wombats	112	Crows	48,308
Bandicoots	1,879	Emus	4,050
Pademelons	21,791	Foxes	66
Wild Pigs	23,000	Flying Foxes	3,591
Hares	551,548		

The loss of stock from native Dogs is reported to have been 195,455 Sheep, valued at £35,670; while the loss from tame Dogs is returned as 62,135 Sheep, valued at £12,196.

The Scarborough Field Naturalists' Society have issued 'Natural History Records of the Scarborough District. Part I. Vertebrata (not including the Fishes).' This catalogue enumerates the Mammals, Birds, Reptiles, and Amphibians. The preface is by the members of the Vertebrate Sub-Committee, who state that "every care has been taken to make the list as complete as possible from the data available, whilst equal care has been exercised to exclude doubtful records. Many species have been omitted, the evidence of their occurrence not being considered sufficiently trustworthy."

The area defined is as follows:—"The extreme coast limits are Flamborough Head and Whitby (south of the Esk). The inland boundary follows the valleys occupied by the railway from Whitby to Pickering. Thence, in the absence of a natural boundary to the south of this point, an arbitrary straight line has been drawn to Weaverthorpe village, and thence to Flamborough Head."

An excellent example of comparing the faunistic records of old authors with the existing fauna of the present day has been set by Mr. J. W. Carr in 'The Naturalist.' He has written an article on "Fishes of the Nottinghamshire Trent in 1622, recorded by Michael Drayton in the 'Poly-Olbion'; with notes on their present occurrence." "In spite of the enormous growth of the city since Drayton wrote, and the pouring into the river of great volumes of foul water from the numerous dyeing, bleaching, tanning, and other works, as well as the effluent from the sewage farm, the fish-fauna seems to have undergone comparatively little change during the interval of 275 years since the publication of the 'Poly-Olbion.'"

In this month's 'Windsor Magazine,' Mr. C. J. Cornish gives some interesting particulars as to "How Animals come to the Zoo." We can only give the following extract:—"The readiest source from which to fill up *lacunæ* in the 'Zoo' is the stock-in-hand of the wild beast dealers, such as the Jamrachs, Cross of Liverpool, or the surplus stock of foreign menageries, or of men like Mr. Hagenbeck, of Hamburg, who both own menageries and import wild animals obtained by their collectors abroad. The animals at the English dealers, are recorded weekly in the 'Field'; but the prices paid for really rare animals do not as a rule transpire. The first expensive purchase made for the 'Zoo' was an Indian Rhinoceros, bought in 1834. The price was merely alluded to as 'heavy'; but, as for that year the cost of purchasing animals was £1200, while in the previous year only £160 was spent, the animal probably cost not much less than £1000. The Society had extraordinary luck in their Rhinoceros collecting, whether by purchase or otherwise, though the animals cost a small fortune. In 1875 they bought of Mr. Jamrach a Rhinoceros, never before seen in Europe, for the great price of £1250. This was believed to be a Sumatran Rhinoceros, though it came from Chittagong. A few months later some undoubted Sumatran Rhinoceroses were shipped to England, and one was purchased, also of Mr. Jamrach, for £600. This was found to differ from the first, which was not only a new species, but at that time the only specimen known to exist! It was named the 'Hairy-eared Rhinoceros,' and several have since been obtained. Another Rhinoceros, from the Straits of Sunda, was then bought for £800, so that at a cost of £3850 the Zoological Gardens were able to exhibit all the species of Rhinoceros found in

Asia. Other high prices paid are £100 for the first Chimpanzee, £800 for a young Hippopotamus, and £600 for a Giraffe."

"In all zoological collections there arises, from time to time, the need for some rough-and-ready surgery. A good example of work of this kind took place yesterday morning (Feb. 24th) in the Elephant-house at the Zoological Gardens, when the front horn of the female Hairy-eared Rhinoceros (*Rhinoceros lasiotis*) was removed. This operation was a repetition of one performed some ten years ago, when, as now, the front horn had become bent backward, and not only interfered with the growth of the posterior horn, but actually penetrated the skin, as would probably have been the case in a short time had the present horn not been removed. The operation was carried out by Mr. Bartlett, the Superintendent, and Mr. Thomson, the head keeper, who had for assistance the staff of the Elephant-house and a number of other keepers. A rope was passed under the body of the animal, which was thus securely girthed, and so drawn up to the stout wooden railings. When she was on her side, her feet were secured with straps, and so she was prevented from struggling. This, of course, was the longest part of the business, for she resisted violently and noisily, and, as may be imagined, a Rhinoceros is not an easy animal to handle. But when once the beast was in position, the removal of the horn was not a long operation, and was certainly unattended with pain. On being cast loose, the Rhinoceros, though at first enraged, soon became calm, and the chief signs of temper were the quick, fierce expirations from the nostrils, which scattered the loose straw on the bottom of the den. The malformation which rendered this operation necessary is of interest, since it throws light on the way in which some forms have been described as distinct species, owing to abnormalities in the horns, due to injury, disease, or excessive growth. It will be remembered that a few years ago the head of an African Rhinoceros showing a third horn was exhibited at a meeting of the Zoological Society; and last year Captain Harrison shot a Black Rhinoceros with five horns, of which the third and fourth were outgrowths from the second, while the fifth seems to have been distinct."—*Standard.*

In 'L'Intermédiaire des Biologistes' for January (No. 5) is a reply to a query which is of interest to British zoologists. It is written by Prof. W. A. Herdman, of Liverpool, and refers to the Common Spiny Lobster:—"I think I can state that the northern limit of distribution of *Palinurus vulgaris* is that part of the Irish Sea which lies between Liverpool and the Isle of Man. It is commoner to the south. I have not heard of it further north, and it has only been occasionally found in our area,—the region which the naturalists here have called the L.M.B.C. district. I have two specimens which have been brought into Liverpool, and the fishermen at Port Erin, at the south end of the Isle of Man, occasionally catch the species. It is recorded in the 'Fauna of Liverpool Bay,' vol. iii. p. 53 (1892)."

THE 'Times of Swazieland' lately received from Mr. John A. Major, of the Umhlaba Bomvu, Lubombo, an interesting communication on the subject of rinderpest amongst the game which at one time abounded on his farm and in its vicinity. Mr. Major writes:—"All the game of any consequence has pretty well died from rinderpest. I believe every Koodoo on the eastern range is dead, together with most of the Rooi-rheibuck; the mortality seems to have been greater amongst these two kinds of Buck than amongst others. From Mr. Whittaker and the natives I hear all the Inyala about the top end of the Tembi have died. Hearing of a Buffalo down near Wests' place in Portuguese territory, I went out with my boys to try and get a shot at same. We found the spoor well in Portuguese territory, as also a great number of dead game. I picked up and carried home no fewer than six pair of Koodoo horns, from a very old bull downwards. This does not include what the Kaffirs picked up. The game appear to die by the banks of the rivers; where the Palata runs through the mountain is a perfect charnel-house. From my own observation here the game seem to die, and the disease spread, in much the same manner as it has done with cattle, but sooner or later to become contaminated. The place where the disease appears to be absent is at the top end of the Umnyama River. Buffalo, Waterbuck, and Blue Wilderbeeste, appear to be the only game not affected with the disease; all other game are totally disappearing. Wild Pigs are particularly subject to the disease, and seven Pigs belonging to Karl Groening, which were herded with his cattle, died of the pest."

THE Johannesburg 'Star' has received from King William's Town the following communication:—"Mr. J. D. Ellis, Honorary Secretary of the Society for the Acclimatization of British Fish in the Cape Colony, yesterday received from Messrs. Halse's farm at Carnarvon a magnificent Loch Leven Trout, weighing 9 lb., 25 inches long and 16 in girth, which escaped from the reservoir and was accidentally killed. It was one of a number of fry liberated in Messrs. Halse's dam only three and a half years ago, and is a great credit to the Pirie Hatchery, from which it was taken in the first instance."

From the last Annual Report of the Limerick Field Club we learn that "the capture of a fine specimen of the Royal Sturgeon (*Acipenser sturio*) was made on July 8th last, by fishermen, near the mouth of the Maigue River, its length being about 10 feet, and its estimated weight between four and five hundredweight.

In "Social Hours with Celebrities," being the third and fourth volumes of 'Gossip of the Century,' by the late Mrs. W. Pitt Byrne, edited by her sister, Miss R. H. Busk, are some interesting reminiscences of Charles Waterton. His 'Wanderings,' a book which had a large circulation, and was in every way successful, never brought its author a penny. The writer of "Social Hours with Celebrities" tells of going to his publishers with Waterton and inspecting the books and finding that the balance was against the naturalist. In his own grounds we read that "the Peacocks on the lawn, however depressing the weather, seemed to vie with each other the moment they saw him approach, in strolling eagerly forward, and spreading out the glory of their fantails for his delectation. Most remarkable of all, however, was it in the woods, where it was impossible not to believe the birds recognized their benefactor when one saw them come out to meet him, flying about him as he walked, settling on his shoulder, and even on his hand when he held it out to them, while a call from his voice would bring them from any distance." It is said that when his body was being conveyed in a boat across the lake for burial in a sequestered nook of the park, which he had himself selected, "a flight of birds suddenly appeared, gathering as it went, and followed the boat to its destination."

Dr. Nicolaus Kleinenberg, Professor of Zoology and Comparative Anatomy at the Royal University of Palermo, died on Nov. 5th last, at Naples, in his fifty-fourth year. He was born in the Baltic Provinces, whence he came to live in Italy about twenty years ago. His fame as an embryologist obtained his appointment at the University of Messina in 1882, from which he was transferred to Palermo. In 1888 he was appointed a member of the "Commissione consultiva per la pesca," to which, in addition to his scientific knowledge, he brought a large amount of practical information acquired by continual intercourse with fishermen. As a supporter of "experimental zones," he was appointed by the Minister of Agriculture to formulate the plan of studies to be pursued at the establishments in the Gulf of Castellamare and of Termini Imerse. The above particulars are taken from 'Giornale Italiano di Pesca e Acquicoltura.'

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